

L 27790-65 EWT(m)/EPA(s)-2/EPF(c)/T/EWP(j)/EPR Pc-4/Pr-4/Ps-4/Pt-10 WW/DJ/RM  
 ACCESSION NR: AP5004312 S/0191/65/000/002/0026/0028

AUTHOR: Bogdanov, I. F.; Grebenshchikova, G. V.; Losev, V. B.; Mishchenko, M. L.;  
 Molchanov, B. V.; Farberov, I. L.

TITLE: Study of the thermal degradation of polychloroorganosiloxane polymers

SOURCE: Plasticheskiye massy, no. 2, 1965, 26-28

TOPIC TAGS: silicorganic polymer, organosiloxane, polychlorosiloxane, polymer thermal degradation, phenylsiloxane polymer, chlorinated polymer

ABSTRACT: The effect of chlorination of the phenyl radical on the thermal stability of polydimethylphenylsiloxanes was studied experimentally. The thermal properties of polydimethyl-, polydimethylchloro-, polydimethyldichloro- and polydimethyltrichlorophenylsiloxane were determined by recording the thermal effects of pyrolysis to 800C on Kurnakov's pyrometer, by measuring the pyrolytic weight loss to 1000C, and by analyzing the gaseous decomposition products generated up to 1000C. The non-halogenated polymer showed a small exothermic effect at 530C, while the chlorine-substituted specimen exhibited stronger exothermic effects at 550-565C, the height of the peaks increasing with the number of chlorine atoms. Chlorine

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containing specimens started to decompose at lower temperatures, and the rate of gas generation and the percentage of bonded chlorine split off as hydrogen chloride both increased with the degree of chlorination. The amount of hydrogen liberated as H<sub>2</sub> or methane as compared with the initial hydrogen content of the methyl groups decreased in the chlorinated polymers, indicating a shielding effect of chlorine with respect to the stability of the methyl. Generally, the thermal stability decreased with increasing chlorine content. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: 00, 00

NO REF SOV: 002

OTHER: 002

Card 2/2

GREBENSHCHIKOVA, L. A.

Grebenshchikova, L. A. "A comparison of certain clinical symptoms with morphological changes in a resected stomach in ulcerous disease." State Order of Lenin Inst for the Advanced Training of Physicians imeni S. M. Kirov. Leningrad, 1956. (Dissertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 27, 1956. Moscow. Pages 94-109; 111.

~~CONFIDENTIAL~~  
FILATOV, A.N., prof.; CHAPLYGINA, Z.A.; DEPP, M.Ye.; GIBRENSHIKOV, L.A.;  
ABRAMOV, V.S.; BLINOVA, A.I.; POVERGO, N.S.; LUGANOVA, I.S. (Leningrad)

Comparative study of some solutions made of heterogenous protein;  
L-103 solution and Belen'kii's serum. Klin.med. 35 no.7:47-53 J1 '57.  
(MIRA 10:11)

1. Iz Leningradskogo ordena Trudovogo Krasnogo Znameni nauchno-  
issledovatel'skogo instituta perelivaniya krovi. 2. Chlen-korespon-  
dent AMN SSSR (for Filatov).

(AMINO ACID MIXTURES,

protein hydrolysates L-103 & Belenkii's serum, comparison  
(Rus))

GREBENSHCHIKOVA, L.A., nauchnyy sotrudnik (Leningrad, Stremyannaya ul.,  
d.13, kv.5)

Comparison of some clinical symptoms with morphological alterations  
of the resected stomach in peptic ulcer [with summary in English,  
p.157]. Vest.khir. 78 no.2:39-45 P '57. (MIRA 10:3)

1. Iz khirurgicheskoy kliniki (zaveduyushchiy - professor A.N.Pilatov)  
Leningradskogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'-  
skogo instituta perelivaniya krovi (nauchnyy rukovoditel' patolgo-  
anatomicheskoy chasti - professor P.V.Sipovskiy)

(GASTRECTOMY, compl.

relation of clin. sympt. to morphol. alterations of  
resected stomach in peptic ulcer (Rus))

GREBENSHCHIKOVA, L.A., nauchnyy sotrudnik

Use of fenilin in the surgical clinic. Akt.vop.persl.krovi no.6:  
220-223 '58. (MIRA 13:1)

1. Khirurgicheskaya klinika (zav. - chlen-korrespondent AMN SSSR,  
prof. A.N. Filatov) Leningradskogo instituta perelivaniya krovi.  
(ANTICOAGULANTS (MEDICINE))

KUZ'MIN, D.S., dotsent; GREBENSHCHIKOVA, L.A., kand. med. nauk; FANTGOF, P.D.

Venography of the lower extremities. Vest. khir. no.7:116-121 J1 '64.  
(MIRA 18:4)

1. Iz khirurgicheskoy kliniki (rukovoditel' - prof. A.N.Filatov) i  
rentgenologicheskogo otdela (rukovoditel' - dotsent D.S.Kuz'min)  
Leningradskogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skogo  
instituta perelivaniya krovi (dir. - dotsent A.D.Belyakov). Adres: Lenin-  
grad, S-24, 2-ya Sovetskaya ul. 16, Institut perelivaniya krovi.

15-57-3-3980D

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3,  
p 208 (USSR)

AUTHOR: Grebenshchikova, L. S.

TITLE: Methods of Mass Dust Sampling of Mine Air by Photo-  
electronic Counters (Metody massovogo pylevogo oprobo-  
vaniya rudnichnogo vozdukha s primeneniym fotoelek-  
tronnogo schetchika)

ABSTRACT: Bibliographic entry on the author's dissertation for  
the degree of Candidate of Technical Sciences, presented  
to the **Kazakhsk. gorno-metallurg. in-t** (Mining and Metallurgical  
Institute of Kazakhstan), Alma-Ata, 1956.

ASSOCIATION: **Kazakhsk. gorno-metallurg. in-t** (Mining and Metallurgi-  
cal Institute of Kazakhstan), Alma-Ata

Card 1/1



67633

SOV/81-59-14-51145

15.6400

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 14, p 464 (USSR)

AUTHORS: Bilik, N.P., Grebenshchikova, L.V.

TITLE: The Improvement of the Quality of the Apparatus Lubricant GOI-54

PERIODICAL: Novosti neft. tekhn. Neftepererabotka, 1958, Nr 8, pp 20 - 22

ABSTRACT: The possibility of extending the temperature range of the operation capacity of the apparatus lubricant GOI-54 has been studied. Substituting polysiloxane liquids for MVP oil in the lubricant ensures the production of lubricants with raised dropping points (75°C) and creep points (60 - 80°C). The viscosity of the lubricant prepared from polysiloxane N3 at -50°C is equal to ~4,000 poise, and from MVP 15,400 poise. The introduction of polyisobutylene and vinypol into the lubricants with the aim of improving their adhesion properties did not show any results. Oxidized synthetic ceresin improves considerably the adhesion of the lubricants to metals. Among the admixtures introduced for increasing the protective property of the lubricants the best proved to be IONOL and TsIATIM-339. For use in temperate and cold climatic zones lubricants based on polysiloxanes or their

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SOV/81-59-14-51145

The Improvement of the Quality of the Apparatus Lubricant GOI-54

mixtures with MVP oils, spindle AU and machine SU are recommended. In regions of hot tropical climate it is expedient to use as bases of the lubricants viscous oils with a low vapor pressure at high temperatures and a good thermal and chemical stability. 4

A. Shakhov

Card 2/2

S/137/62/000/006/113/163  
A052/A101

AUTHORS: Kuznetsov, G. M., Grebenshchikova, L. Ye.

TITLE: The effect of diffusion annealing on the critical degree of deformation in Al-Fe alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 42, abstract 61250 ("Sb. nauchn. tr. In-t tsvetn. met. im. M. I. Kalinina", 33, 1960, 268 - 270)

TEXT: Ingots of Al-0.1% Fe, Al-0.2% Fe, Al-0.5% Fe alloys and of pure Al [AB000 (AV000)] were cut in two parts; one part was subjected to diffusion annealing under the following conditions: 100 hours at 450°C, then a slow rise of temperature to 550°C during 100 hours. Both treated and untreated parts of the ingots were hot-rolled at 420 - 450°C and cold-rolled to 0.8 mm thickness. The degree of deformation at cold rolling made up 84%. The produced specimens were subjected to recrystallization annealing to obtain the grain size of 0.2 - 0.3 mm, and then stretched to different degrees of deformation and annealed at 500°C for 1 hour, and the grain size was determined again. In alloys not subjected to dif-

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S/137/62/000/006/113/163  
A052/A101

The effect of...

fusion annealing Fe-additions increase essentially the critical degree of deformation (from 2% for a pure Al to 11.5% for Al-0.5% Fe alloy). The high-temperature diffusion annealing of alloys decreases essentially the critical degree of deformation, however with an increase of the amount of Fe the critical degree of deformation increases also for the diffusion-annealed alloys (from 2.5% for Al-0.1% Fe alloy to 4% for Al-0.5% Fe). The effect of diffusion annealing on the change of the critical degree of deformation is explained by the elimination of supersaturation of the solid solution which is formed in the process of non-equilibrium crystallization.

P. Zubarev

[Abstracter's note: Complete translation]

Card 2/2

GREBENSHCHIKOVA, M.P.

PRIKHOTKO, A.F.  
24(7) 13 PHASE I BOOK EXPLOITATION SOV/1365  
L'vov. Universitet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1:  
Molekulyarnaya spektroskopiya (Papers of the 10th All-Union  
Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy)  
[L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies  
printed. (Series: Ita: Fizichnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po  
spektroskopii. Ed.: Jazer, S.L.; Tech. Ed.: Saranyuk, T.V.;  
Editorial Board: Landsterg, O.S., Academician (Resp. Ed., Deceased),  
Neporent, B.S., Doctor of Physical and Mathematical Sciences,  
Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences,  
Fabrikant, V.A., Doctor of Physical and Mathematical Sciences,  
Kornitakis, V.G., Candidate of Technical Sciences, Rayskiy, S.M.,  
Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K.,  
Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S.,  
Candidate of Physical and Mathematical Sciences, and Glauberman,  
A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Savinov, B.G. Use of Infrared Absorption Spectra in  
Determining the Characteristics of the Products of  
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Belyy, M.U. Optical Method for the Determination of  
the Composition of Complexes in Solutions

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Bogomolov, S.G., M.P. Grebenshchikova, and I. Ya.  
Liplavk. Analysis of Phenol-Naphthalene Mixtures  
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of the Naphthalene Hydrocarbons by Means of  
Ultraviolet Absorption Spectra

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Spectrophotometric Methods of Phase Control in  
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Neporent, B.S., K.P. Vasilevskiy, and N.A. Lapina.  
Qualitative Absorption by Means of Water Vapor in  
Near Infrared Region

Card 18A-

GREBENSHCHIKOVA, M.P.; MUKHORINA, K.V.; BOGOMOLOV, S.G.

Absorption spectrum of extracts of potatoes prepared with the diethanolamino salt of malonic acid hydrazide. Vop.pit. 20 no.3: 60-63 My-Je '61. (MIRA 14:6)

1. Iz kafedry fiziki (zav. - dotsent S.G.Bogomolov) i kafedry gigiyeny pitaniya (zav. - prof. A.I.Shtenberg) Sverdlovskogo meditsinskogo instituta.  
(MALONATES) (POTATOES SPECTRA)

G. REBENSHCHIKOVA, M. P.

110

PHASE I BOOK EXPLOITATION

SOV/6181

Ural'skoye soveshchaniye po spektroskopii. 3d, Sverdlovsk, 1960. Materialy (Materials of the Third Ural Conference on Spectroscopy) Sverdlovsk, Metallurgizdat, 1962. 197 p. Errata slip inserted. 3000 copies printed.

Sponsoring Agencies: Institut fiziki metallov Akademii nauk SSSR. Komissiya po spektroskopii; and Ural'skiy dom tekhniki VSNTO.

Eds. (Title page): G. P. Skorniyakov, A. B. Shayevich, and S. G. Bogomolov; Ed.: Gennadiy Pavlovich Skorniyakov; Ed. of Publishing House: M. L. Kryzhova; Tech. Ed.: N. T. Mal'kova.

PURPOSE: The book, a collection of articles, is intended for staff members of spectral analysis laboratories in industry and scientific research organizations, as well as for students of related disciplines and for technologists utilizing analytical results.

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Materials of the Third Ural Conference (Cont.)

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SOV/6181

**COVERAGE:** The collection presents theoretical and practical problems of the application of atomic and molecular spectral analysis in controlling the chemical composition of various materials in ferrous and nonferrous metallurgy, geology, chemical industry, and medicine. The authors express their thanks to G. V. Chentsova for help in preparing the materials for the press. References follow the individual articles.

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**PART I**

Sherstkov, Yu. A., and L. F. Maksimovskiy. Investigation of the dependence of the total intensity of spectral lines on the concentration of elements in an arc-discharge plasma

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Materials of the Third Ural Conference (Cont.)

SOV/6181

PART II

- Vasilevskiy, K. P., and B. S. Neporent. Absorption of infrared radiation by water vapor in mixtures with foreign gases 145
- Kislovskiy, L. D. New method of absorption analysis based on reflection 151
- Bogomolov, S. G., A. P. Kolesov, M. P. Grebenshchikova, and E. I. Gorbunova. Utilization of ultraviolet spectroscopy in analysis of by-product coke xylene 157
- Korshunov, A. V., and A. A. Kolovskiy. Spectra of low-frequency Raman light scattering by some heptahydrate crystals 164

Card 12/15

MYULLER, R.L.; BORISOVA, Z.U.; GREBENSHCHIKOVA, N.I.

Kinetics of solution of arsenic selenide in an alkaline solution;  
Zhur.prikl.khim. 34 no.3:533-537 Mr '61. (MIRA 14:5)  
(Arsenic selenide)

ACCESSION NR: AT4019312

S/0000/63/003/001/0167/0169

AUTHOR: Petrovskiy, G. T.; Krestnikova, Ye. N.; Grebenshchikova, N. I.

TITLE: Catalyzed crystallization of glasses of the lithium gallium silicate system

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vyxp. I: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. I: Catalyzing crystallization of glass). Trudy\* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 167-169

TOPIC TAGS: glass, glass crystallization, catalyzed crystallization, lithium silicate, gallium silicate

ABSTRACT: Lithium gallium silicate glasses containing various additives were investigated to determine the effect of composition on structure. The thermal expansion coefficients are tabulated for aluminum- and gallium-containing lithium silicate glasses and semi-crystalline samples, and the data are compared with data obtained by other investigators. Crystallization was effected for 8 hours at 950C. A glass with the composition  $\text{Li}_2\text{O}-\text{Ga}_2\text{O}_3-6\text{SiO}_2$  had a large amount of the vitreous phase even after exposure to 1000C for ten hours. The thermograms for glasses of varying composition are given. Thermal analysis showed that because

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ACCESSION NR: AT4019312

of the high rate of heating, the crystallization temperatures determined by this method exceed the temperature at which the crystallization actually occurs. During the thermal treatment of lithium-gallium silicate glasses containing titanium dioxide, at 650C, a typical coloration of the glasses can be detected, the intensity of which can be reduced by the addition of certain oxides. The variations in the properties (such as the refractive index, dispersibility, density, and microhardness) during crystallization is shown by tabulated data for gallium glass. The heat capacity data show that the "defrosting" of the valency variations occurs at lower temperatures for gallium oxide than for aluminum oxide. Hence, the gallium glasses are more readily soluble than aluminum glasses, but the loss of transparency occurs at lower temperatures for gallium-containing ceramics. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: none

SUBMITTED: 17May63

DATE ACQ: 21Nov63

ENCL: 00

SUB CODE: MT

NO REF SOV: 007

OTHER: 004

Card 2/2

17906-63 EWP(q)/EWT(m)/BJS AFFTC/ASD Pg-4 WH  
ACCESSION NR: AP3003765 S/0080/63/036/006/1199/1204

AUTHORS: Grebenshchikova, N. I.; Petrovskiy, G. T. 38

TITLE: Solution kinetics of several fluoroberyllate glasses 15  
in water

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 6, 1963, 1199-1204

TOPIC TAGS: glass, fluoroberyllate glass, solution kinetics,  
stability, Na, K, Cs.

ABSTRACT: Analysis of the solution kinetics in water of 24 non-oxygen-containing fluoroberyllate glasses (4-component systems  $\text{BeF}_2$ - $\text{AlF}_3$ - $\text{MgF}_2$ - $\text{R}'\text{F}$ , where  $\text{R}' = \text{Na, K, Cs}$ ) indicated that the solution is of non-diffusion character, since rate of solution was independent of agitation and the activation energy  $E$  of the process was much higher than for diffusion.  $E = 1200 \text{ kcal/mol.}$ ; the value of the preexponential factor was near to that calculated theoretically. Since the different solubilities of Na, K and Cs fluorides do not appear in the corresponding chemically-stable glasses, these fluorides must enter into the glass in the

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ACCESSION NR: AP3003765

structure of the component fluoroberyllates. Replacement of  $MgF_2$ ,  $BF_3$  or  $R'F$  by  $AlF_3$  increases glass stability; replacement of  $R'F$  by  $MgF_2$  has little effect. Replacement of  $BF_3$  with  $KF$  decreases stability. In  $BeF_2$ - $MgF_2$ - $R'F$  systems containing more than 30% alkali,  $KF$  glasses are better in that they crystallize less than  $NaF$  glasses. Orig. art. has: 1 figure, 4 tables and 5 equations.

ASSOCIATION: none.

SUBMITTED: 02Apr62

DATE ACQ: 07Aug63

ENCL: 00

SUB CODE: CH, MA

NO REF SOV: 008

OTHER: 003

Card

2/2

L 13559-66 EWP(e)/EWT(m)/EWP(b) GS/WH

ACC NR: AT6000500

SOURCE CODE: UR/0000/65/000/000/0327/0331

AUTHOR: Petrovskiy, G. T.; Krestnikova, Ye. N.; Grebenshchikova, N. I.; Proskuryakov, M. V.

ORG: None

33  
B-1

TITLE: Structural interpretation of the possibility of creation of transparent glass-crystal materials in various systems

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya, Leningrad, Izd-vo Nauka, 1965, 327-331

TOPIC TAGS: glass property, optic property, silicate glass

15.44

ABSTRACT: The authors survey ways for the creation of transparent glass-crystal materials and report some recent investigations of their own concerning 1) the experimental checking of the assumption that larger changes in glass viscosity above 660C can be explained by the inclusion of the bonds otherwise frozen in liquefaction groupings; 2) the feasibility of transparent glass ceramics formation in  $\text{SiO}_2\text{-Bi}_2\text{O}_3\text{-SrTiO}_3\text{(BaTiO}_3\text{, PbTiO}_3\text{)}$ ,  $\text{SiO}_2\text{-ZnO-K}_2\text{O}$  and  $\text{SiO}_2\text{-B}_2\text{O}_3\text{-ZnO}$ , and beryllium oxide-containing systems; and 3) the role of polar and nonpolar components in lithium-gallium silicate. All the results seem to confirm the previously proposed mechanism for the production of transparent glass-ceramic material (G. T. Petrovskiy, I. M. Buzhinskiy, OMP, 4, 31, 1963) which required the simultaneous presence of cations which

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ACC NR: AT6000500

during the heat treatment of glass increase and decrease, respectively, their coordination number. The crystallization process is determined not only by the catalyzer content but also by the ratio between the polar and nonpolar components. Orig. art. has: 4 figures and 1 table.

SUB CODE: 11, 20 / SUBM DATE: 22May65 / ORIG REF: 005 / OTH REF: 001

Cord 2/2



PETROVSKIY, G. T.; KRESTNIKOVA, Ye. N.; GREBENSHCHIKOVA, N. I.; PROSKURYAKOV, M. V.

3

"Structural interpretation of the possibility of obtaining glass-crystalline materials."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,  
16-21 Mar 64.

IBRAGIMOV, Yu.I.; GRIBENSHCHIKOVA, N.P.; ALIYEV, Ya.Yu.; SIGOV, S.A.

Conversion of natural gas and water vapor on iron-nickel catalysts. Uzb. khim. zhurn. no.4:49-54 '60. (MIRA 13:9)

1. Institut khimii AN UzSSR.  
(Catalysts; Nickel) (Gas, Natural)

GREBENSHCHIKOVA, N.P.; IBRAGIMOV, Yu.I.; ALIYEV, Ya.Yu.; ISAKOV, Ya.I.

Conversion of natural gas on a nickel catalyst in the presence  
of silica. Uzb.khim.zhur. no.4:73-78 '61. (MIRA 14:8)

1. Institut khimii AN UzSSR.  
(Gas, Natural) (Catalysis)

ALIYEV, Ya.Yu.; GREBENSHCHIKOVA, N.P.; KRYLOV, G.M.; ANAN'YEV, K.V.

Phase composition of aluminosilicate and its components. Uzb.  
khim.zhur. 8 no.2:5-11 '64. (MIRA 17:5)

1. Institut khimii AN UzSSR.

ALIYEV, Ya.Yu. [deceased]; GREBENSHCHIKOVA, N.P.; KRYLOV, G.M.; IERAGI-  
MOV, Yu.I.; KHAMIDOV, Yu.A.; ANAN'YEVA, K.V.

Conversion of natural gas on a nickel catalyst in the presence  
of silica. *Uzb. khim. zhur.* 9 no. 4:69-74 '65. (MIRA 18:12)

1. Institut khimii AN UzSSR. Submitted July 24, 1964.

L 21998-66 EWT(m)/EWP(j) WW/RM

ACCESSION NR: AP5024502

UR/0191/65/000/010/0025/0027  
678.644'142.01:537.226

63  
62/3

AUTHOR: Sazhin, B. I.; Eydel'nant, M. P.; Belosludtseva, Ye. I.; Cherkanov, S. P.; Grebenshchikova, V. A.

TITLE: Dielectric properties of polypropylene oxide

SOURCE: Plasticheskiye massy, no. 10, 1965, 25-27

TOPIC TAGS: polymer, electric property, dielectric permeability, specific resistance, dielectric loss, crystalline polymer, amorphous polymer, *dielectric property*

ABSTRACT: The electric properties of polypropylene oxide (PPO) were investigated in the absence of literature data. The dielectric permeability and the tangent of the angle of dielectric loss were determined in the -120 to -80 C temperature range at frequencies from  $10^{-1}$  to  $10^6$  cycles/sec for samples having different degrees of crystallinity. Maximum dielectric permeability and dielectric losses were observed in the -70 to -20 C temperature range at all frequencies. These values decreased with increase in polymer crystallinity. From the apparent energy of activation calculated for the  $10^2$ - $10^5$  cycles/sec range, 41 kcal/mol.

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L 21998-66

ACCESSION NR: AP5024502

the losses are of the dipole-elastic type. The maximum temperatures for the dielectric and mechanical losses are both about -65C, indicating the same mechanism, that is, segmentary movement of macromolecules in the amorphous region. The extent of the contribution to static dielectric permeability introduced by dipole-elastic polarization decreases as the degree of crystallinity increases. At room temperature, dielectric permeability values decrease and resistivity increases as the crystallinity of the PPO is increased. "X-ray determinations of the degree of crystallization were determined by M. A. Martynov." Orig. art. has: 4 figures, 1 table and 4 equations.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: 07, 20

NR REF SOV: 002

OTHER: 004

Card 212 BK

GREBENSHCHIKOVA, V.G., TSINZERLING, A.V.

A case of cardiac rupture with an unusual course. Klin.med. 36  
no.4:129-131 Ap'58 (MIRA 11:5)

1. Iz I Voenno-morskogo ordena Lenina' gospitalya (nach. Ye.Ye.  
Polishuk)

(MYOCARDIAL INFARCT, compl.

heart rupt. (Rus))

(HEART, rupt.

caused by myocardia infarct (Rus))



GREBENSHCHIKOVA, V. I.

Grebenshchikova, V. I. "The morphological condition of the blood of donors after many blood donations," Trudy Kirovskogo in-ta epidemiologii i mikrobiologii, Collection 2, 1948, p. 144-49, - Bibliog: 11 items.

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nykh Statey, No. 17, 1949).

GREBENSHCHIKOVA, V. I.

GREBENSHCHIKOVA, V. I. -- "A Comparative Morphological and Histochemical Investigation of the Digestive Tract of the Rabbit and Pig." Sub 7 Mar 52, Moscow Order of Lenin State U imeni M. V. Lomonosov. (Dissertation for the Degree of Candidate in Biological Sciences.)

SO: Vechernaya Moskva January-December 1952

GREBENSHCHIKOVA, V. I.

Chemical Abst.  
Vol. 48 No. 8  
Apr. 25, 1954  
Biological Chemistry

(2)  
Morphological and histochemical study of the Brunner glands of rabbit and pig. V. I. Grebenshchikova (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 92, 1217-20(1953).—The structure of the Brunner glands in the rabbit differs from that in the pig, the difference probably arising from differences in physiol. roles. The dark areas are present only in the rabbit and these elaborate a secretion which is not present in the pig specimens. Vitamin C appears in large amts. in the canals from the Brunner glands of rabbit, where it apparently activates the enzyme elaborated by the glands. Ascorbic acid in the pig specimens is located in the centers of the glandular segments. Very little vitamin C is found in the dark portions of the rabbit specimens; these are strongly basophilic, contain much ribonucleic acid, and form a secretion probably of protein type. Small amounts of arginine are found only in the light areas of the rabbit specimens; histidine has similar distribution.  
G. M. Kosolapoff

GREBENSHCHIKOVA, V. I.

Nov/Dec 48

USSR/CHEMISTRY - IONS  
ADSORPTION

"The Nature of Ion Absorption by Clays and Soils: V, Absorption of Heavy Metal Ions by Clays and Soils Under Dynamic Conditions," I. N. Antipov-Karatayev, M. A. Pasvik-Khilopina, M. S. Merkulova, V. L. Grebenshchikova, Soil Institute, and Radium Institute, Acad Sci USSR, 5 pp

"Kolloid Zhur" Vol X, No 6

Experiments show that the method of sorption filtration can be used for quantitative studies of interchange and adsorption processes in soils under dynamic disequilibrium conditions, and that it facilitates establishing a quantitative relationship between the static absorption capacity and the dynamic activity of soils. Submitted 22 Mar 47.

PA 65.49T11

SEPELAKHCHIKOVA, V. I., CHEKUNYAVSKAYA, L. N., YAKOVLEV, I. N., and ALEXANDOV, B. I.

"The Sulphate Method of Separating Plutonium and Neptunium," a paper  
presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

KURCHATOV, B.V., starshiy nauchnyy sotrudnik-khimik; GREBENSHCHIKOVA, V.I., starshiy nauchnyy sotrudnik; CHERNYAVSKAYA, N.B., nauchnyy sotrudnik; YAKOVLEV, G.N., nauchnyy sotrudnik

[Sulfate method for isolating plutonium and neptunium] Sul'fatnyi  
metod vydeleniia plutoniia i neptuniia. Moskva, 1955. 7 p.  
(MIRA 14:6)

(Plutonium)

(Neptunium)

STARIK, I.Ye.; RATNER, A.P. [deceased]; GROSHKOV, G.V.; MURIN, A.N.;  
STARIK, A.S.; GREENSHENIKOVA, V.I.; KLOKMAN, V.P.; NEPEDOV, V.D.;  
LUB'YE, B.G.; ISHINA, V.A.; SMIRNOV, L.A.; YEFIMOVA, Ye.I.;  
TOROPOVA, M.A.; SIMONYAK, Z.N.; FRENKLIKH, M.S.; SHCHEPINLEVA, Ye.V.,  
redaktor; VODOLAGINA, S.D., tekhnicheskiy redaktor

[A collection of practical studies in radio chemistry] Sbornik  
prakticheskikh rabot po radiokhimii. [Leningrad] 1956. 210 p.  
(MLRA 10:1)

1. Leningrad. Universitet.  
(Radiochemistry)

GREBENSHCHIKOVA, V. I.

KHLOPIN, V.G.; VINOGRADOV, A.P., akademik, redaktor; GRINBERG, A.A., redaktor;  
GREBENSHCHIKOVA, V.I., kandidat khimicheskikh nauk, redaktor; KLOKMAN,  
V.R., kandidat khimicheskikh nauk, redaktor; NIKITIN, B.A., redaktor  
[deceased]; PASVIK, M.A., kandidat khimicheskikh nauk, redaktor,  
[deceased]; RATNER, A.P., doktor khimicheskikh nauk, redaktor [deceased];  
STARIK, I.Ye., redaktor; BROTTMAN, Ya.A., redaktor izdatel'stva;  
PEVZNER, R.S., tekhnicheskiy redaktor

[Collected works] Izbrannye trudy. Moskva, Izd-vo Akad. nauk SSSR.  
Vol.2. [Works on inorganic and analytic chemistry and on geochemistry]  
Trudy po neorganicheskoi i analiticheskoy khimii i po geokhimii. 1957.  
306 p. (MLBA 10:8)

1. Chlen-korrespondent Akademii nauk SSSR (for Grinberg, Starik,  
Mikitin)  
(Chemistry, Analytic) (Chemistry, Inorganic) (Geochemistry)



GREENSHCHIKOVA, V. I.

KHLOPIN, V.G.; NIKITIN, B.A. [deceased] otvetstvennyy redaktor; RATNER, A.P. [deceased] doktor khimicheskikh nauk, otvetstvennyy redaktor; VINOGRADOV, A.P., akademik, redaktor; GRINBERG, A.A., redaktor; ~~GREENSHCHIKOVA, V.I.~~, kandidat khimicheskikh nauk, redaktor; KLOKMAN, V.R., kandidat khimicheskikh nauk, redaktor; PASVIK, M.A. [deceased] kandidat khimicheskikh nauk, redaktor; STARIK, I.Ye., redaktor; BROITMAN, Ya.A., redaktor izdatel'stva; PEVZNER, R.S., tekhnicheskii redaktor

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad. nauk SSSR. Vol. 1 [Works in the field of radiochemistry] Trudy v oblasti radiokhimii. 1957. 370 p. (MIRA 10:4)

1. Chlen-korrespondent Akademii nauk SSSR (for Nikitin, Grinberg, Starik)  
(Radiochemistry)

AUTHOR

GREBENSHCHIKOVA, V.I., TROPIMOV, A.M.

85-6-124

TITLE

The All-Union Congress on Radiochemistry.  
(Vsesoyuznoye soveshchaniye po radiokhimi.- Russian)  
Atomnaya Energiya 1957, Vol 2, Nr 6, pp 562-563 (USSR).

PERIODICAL

ABSTRACT

This congress, which took place at Leningrad, was attended by about 600 scientists from various cities of the country. The 50 lectures delivered on this Congress dealt with the main problems of theoretical radiochemistry and the chemistry of some radioactive elements. Also the form of the existence of small quantities of radioactive substances in solutions and solids, as well as their behavior on the occasion of precipitation with carriers, the laws of the distribution between two non-mixing phases, the chemistry of technetium, promethium, and the transplutonium elements (americium, curium, berkelium, californium) etc. was dealt with. The central problem of radiochemistry consists in the investigation of the state of radioactive elements in diluted solutions and of their behavior on the occasion of precipitation with crystalline deposits.

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82-6015, 24  
The All-Union Congress on Radiochemistry.

I.E. STARIK and his collaborators established the fact of the existence of true colloids in substances which are in solution in extreme dilutions. By this the production of truly colloidal solutions of radioactive substances, which had been denied for a long time, is confirmed.

By combining different methods of investigation for colloidal solutions it is possible, univocally to determine the portion of the matter existing in the solution in the ionic state as well as in form of true colloids and pseudo-colloids. The Congress also discussed several problems connected with the application of adsorption processes in chemical practice. The results of theoretical and experimental investigations concerning the following problems were dealt with:

Theory of ion exchange, chromatographical separation of rare earths and transuranium, determination of the state of radioactive elements in a solution by their adsorption on glass, and ion-exchange-resins, selective adsorption of some radioactive elements on ion-exchange resins, silicate-gel, and on other porous adsorbents. The Congress arranged

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GREBENSHCHIKOVA, V.I.

Adsorption of radium on lead sulfate. Trudy Radiy. inst. AN SSSR  
5 no.2:134-147 '57. (MLRA 10:8)  
(Radium) (Adsorption) (Lead sulfate)

GREBENSHCHIKOVA, V.I.

GUREVICH, A.M.; GREBENSHCHIKOVA, V.I.

All-Union Conference on Radiochemistry. Zhur.anal.khim. 12  
no.4:572 J1-Ag '57. (MIRA 10:10)  
(Leningrad--Radiochemistry)

GREBENSHCHIKOVA, V. I. and BRYZGALOVA, R. V. (Radium Inst im V. G. Khlopin AS USSR)

"Determining the Distribution Constants of V. G. Khlopin by the Method of Partial Recrystallization of the Solid Phase"

Isotopes and Radiation in Chemistry, Collection of papers of 2nd All-Union Sci.Tech. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, Moscow, Izd-vo. AN SSSR, 1958, 380pp.

This volume publishes the reports of the Chemistry Section of the 2nd AU Sci Tech Conf on Use of Radioactive and Stable Isotopes and Radiation in Science and the National Economy, sponsored by Acad. Sci. USSR and Main Admin for Utilization of Atomic Energy under Council of Ministers USSR, Moscow, 4-12 April 1957.

GREBENSHCHIKOVA, V. I.

AUTHOR: Grebenshchikova, V. I.

78-1-4/43

TITLE: On the Coprecipitation of Micro-Quantities of Substances With Crystalline Deposits (O soosazhdenii mikrokolichestv veshchestva s kristallicheskimi osadkami).

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 1, pp. 20-24 (USSR)

ABSTRACT: The problem of the behavior of the impulse-amounts of substance with its separation from the solution, both with isomorphous and with non-isomorphous carriers forms a case in which the knowledge of the behavior of the substances in extreme dilution is quite indispensable. Problems in connection with the elaboration of analytical and technological methods of isolation of the isotopes, the production of pure reagents, highly active preparations and so on belong here. The author gives a brief survey on the previous elaborate investigations (reference 1,2,4) relating to this problem. As is well known, the law of distribution of an isomorphous substance between the crystals and the saturated solution is called Khlopin's law. It can only be applied to diluted solid solutions. The most important conclusion of the 4 possibilities

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On the Coprecipitation of Micro-Quantities of Substances  
With Crystalline Deposits

78-1-4-/43

of application is the following: the application of Khlopin's law on the distribution of the substances between the crystalline deposit and its saturated solution; it points to the isomorphism of the investigated substances in the sense of Mitcherlikh's (Mitscherlich). This latter fact was applied for the study of the isomorphism of substances which occur in extremely small quantities in nature. Only by means of isomorphous coprecipitation their valency could be determined. The constance of the coefficients of distribution gives evidence of a great approach of the ion-sizes and of the quality of the ionic charges of the micro- and macro-component of the respective systems. The author reviews the discoveries made by this method. It was hard to assume that the formation-mechanism of both abnormal and real mixed crystals is the same. The replacement of the ion of the basic substance by the ion of the distributing substance was rather unlikely on account of the different valency. Test results (reference 8) show that the abnormal mixed crystals obey Kholpin's law, by which an equilibrated distribution of the micro-component between the crystal and the solution is

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On the Coprecipitation of Micro-Quantities of Substances  
With Crystalline Deposits

78-1-4/43

characterized. The fundamental difference between the real and the abnormal mixed crystals was found, too. No lower minimum of miscibility was observed for the real isomorphous substances, whereas the same was experimentally found for abnormal crystals (references 8 to 11). The following conclusions may be drawn from the experimentally found material: though the constancy of the coefficients of distribution pointed to the possible equilibrium between the abnormal mixed crystals and the solution and represented them as solid solutions, the minimum miscibility seems to indicate a more complicated formation mechanism of the mixed crystals. If such mixed crystals have a mosaiclike structure, Khlopkin's law could only formally be applied to them. The test results, however, are in contradiction to this. Recently (references 12,13) mixed crystals without a minimum miscibility were discovered too. They cannot be distinguished from the real mixed crystals by the previously applied methods. New experimental material (references 19 to 21) is available at present. It indicates that the distribution of the micro-component can take place both according to Khlopkin's law,

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GREBENSHCHIKOVA, V. I.

AUTHORS: Grebenshchikova, V. I., Bryzgalova, R. V. 78-1-8/43

TITLE: The Determination of V. G. Khlopin's Constant of Distribution by Means of the Method of Partial Recrystallization of the Solid Phase (Opredeleniye konstanty raspredeleniya V. G. Khlopina metodom chastichnoy perekristallizatsii tverdogo fazy).

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 1, pp. 36-39 (USSR)

ABSTRACT: The authors describe a new method of determination of the aforesaid constant by which the result is much quicker obtained than with those actually applied (reference 1). Radioactive indicators are used, by which instead of a complete recrystallization of the solid phase, a partial recrystallization of the deposit is sufficient. This method is based upon the assumption of equal velocity of both the isotope and isomorphous exchange between the solid phase and the solution. If, together with the isomorphous ion (micro component), a radioactive isotope which forms part of the deposit to a saturated salt solution (macro component) which is in contact with the deposit, the quantity of the solid

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The Determination of V. G. Khlopin's Constant of Distribution 78-1-8/43  
by Means of the Method of Partial Recrystallization of the  
Solid Phase

expressed in percents. Lanthanum oxalate  $\text{La}_2(\text{C}_2\text{O}_4)_3 \cdot 9\text{H}_2\text{O}$ .  
served as macro component. The isotope  $\text{Am}^{241}$  ( $\alpha$  radiator,  $T = 475$  years) was used as micro component.  
 $\text{La}^{140}$  ( $\beta$  radiator,  $T = 1,65$  days) was added as radioactive indicator.  $D$  was determined - for the purpose of comparison - by two previously known methods, viz. 1) Attainment of the equilibrium between the solid and liquid phase "from above" and "from below" by means of a long lasting recrystallization of the deposit in a saturated solution and 2) by crystallization of the solid phase from an oversaturated solution. 1) As shown in fig. (1), the authors did not succeed in achieving a full recrystallization and to compute from this the true value of the coefficient  $D$ . 2) The character of distribution of the micro component was different in the tests performed by the authors than was the one described by Khlopin and his collaborators (reference 1). The distribution took place according to the logarithmic law (reference 2) (table 1). The determination

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The Determination of V. G. Khlopin's Constant of Distribution 78-1-8/43  
by Means of the Method of Partial Recrystallization of the  
Solid Phase

SUBMITTED: June 18, 1957

AVAILABLE: Library of Congress

Card 5/5

Co-Precipitation of Lanthanum, Cerium and Americium With Potassium Sulfate 78-1-9/43

was calculated from the adsorption of the isotope ion  $K^{42}$ . The authors found that its magnitude with an adsorbent which is precipitated by quick mixing from a strictly determined supersaturated solution, remains the same and varies within the limits of  $\pm 5\%$  (table 2). This is proved by the straight dependence of the extent of the adsorption of  $K^{42}$  on the weight of the adsorbent (fig. 1). The elements mentioned form, as we know, with  $K_2SO_4$  difficultly soluble double salts. Their solubility in the  $K_2SO_4$  solution was unknown. The authors isolated them and also determined their composition in addition to their solubility (table 3). Experiments with the adsorption of  $Ce^{2+}$  and  $La^{3+}$  showed that the absolute quantity of adsorbed ions increases with the concentrations of the elements in the solutions. As is seen from fig. 3 and 4 the percentage of adsorbed  $Ce^{3+}$  and  $La^{3+}$  is not changed in the concentrations of microcomponents investigated. This proves that the operation is carried out on the straight part of the curve where the adsorption is far off the saturation

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in the solution after the crystallization and  $\lambda$ -the distribution coefficient in the logarithmic formula of Derner-Goskins (Doerner-Hoskins). From the results it appears that  $\text{La}^{3+}$ ,  $\text{Ce}^{3+}$  and  $\text{Am}^{3+}$  are taken along into the interior of the  $\text{K}_2\text{SO}_4$ -crystal and there distribute according to a constant crystallization coefficient. The values

$$\lambda_{\text{Ce}} = 15, \lambda_{\text{La}} = 17 \text{ and } \lambda_{\text{Am}} = 42$$

remain constant, independent from the quantity of the solid phase separated. The value of the crystallization coefficient of the microcomponents remains constant between the concentrations  $1,6 \cdot 10^{-6}$  and  $3 \cdot 10^{-10}$  (fig. 3,4). Each of the three micro-components distributes between the  $\text{K}_2\text{SO}_4$ -deposit and its concentrated solution according to its own and constant distribution coefficient (tables 6,7). According to Khlopin this speaks in favor of a formation of mixed crystals (ref. 4). The dependence of the crystallization

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GREBENSHCHIKOVA, V.I.; BRYZGALOVA, R.V.; CHERNYAVSKAYA, N.B.; BOBROVA, V.N.

Cocrystallization of small quantities of substances with crystalline  
precipitates. Radiokhimiia 1 no.1:11-21 '59. (MIRA 12:4)  
(Crystallization)

GREBENSHCHIKOVA, V.I., kand.khimicheskikh nauk

Cocrystallization of radioactive substances with different  
precipitates. Khim.nauka i prom. 4 no.4:456-464 '59.

(MIRA 13:8)

(Radioactive substances)

(Crystallization)



SOV/76-4-4-39/44

5(2), 21(5)  
 AUTHORS: Grebenshchikova, V. I.; Chernyavskaya, N. B.

TITLE: Investigation of the Sulphate-method for Separating Transuranic Elements. Communication I (Issledovaniye sul'fatnogo metoda vydeleniya transuranovykh elementov. Soobshcheniya I)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 941-949 (USSR)

ABSTRACT: The authors synthesized the double sulphate of potassium and lanthanum with the composition  $K_3La(SO_4)_3$ . The double sulphates of potassium and plutonium, which are composed of  $K_6Pu(SO_4)_5$  and  $K_4Pu(SO_4)_4$ , were produced from  $K_2SO_4$  and  $Pu(NO_3)_4$ . The authors determined the solubility of  $K_3La(SO_4)_3$  and  $K_4Pu(SO_4)_4$  in 0.19 and 0.38 molar potassium sulphate solution. It was shown that plutonium is coprecipitated with  $K_3La(SO_4)_3$ . The experimental results of coprecipitation are contained in tables 5-8, which indicate that plutonium is completely precipitated, plutonium distribution being not homogeneous in crystals. A precipitate of anomalous mixed crystals is formed

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Investigation of the Sulphate-method for Separating Transuranic Elements  
Communication I

by plutonium and lanthanum. The distribution coefficient of  $\text{Pu}^{4+}$  decreases with increasing concentration of potassium sulphate in the solution. The crystallization coefficients  $D$  of the systems  $\text{K}_3\text{La}(\text{SO}_4)_3\text{-K}_4\text{Pu}(\text{SO}_4)_4$  and  $\text{K}_3\text{La}(\text{SO}_4)_3\text{-K}_x\text{Am}(\text{SO}_4)_y$  were determined and are given in figures 4 and 5. The coprecipitation of americium with potassium-lanthanum double sulphate was investigated, and it was found that the distribution of Am between the solid and liquid phase is similar to that of plutonium. The dependence of the distribution coefficient of americium on the concentration of potassium sulphate and americium in the solution was investigated at  $20^\circ$ . The results are contained in table 9. It was stated that the distribution coefficient of americium is independent of the concentration of potassium sulphate. The coprecipitation of  $\text{Am}^{3+}$  and  $\text{Pu}^{4+}$  with the macrocomponent is explained by the formation of complex ions in the solution. The complex  $\text{Pu}(\text{SO}_4)_3^{2-}$  is formed by plutonium in the solution. The optimum conditions of the separation of both elements by the sulphate method may be de-

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Investigation of the Sulphate-method for Separating Transuranic Elements  
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terminated from data on the distribution coefficients of Am and Pu. By single precipitation 97-98% plutonium, rendered impure by 6-8% of the americium content, may be obtained from the solution. Plutonium is completely purified from americium by several precipitations. The results are important in analytical chemistry for explaining the mechanism of precipitations. The distribution of  $Pu^{4+}$  and  $Am^{3+}$  in the presence of both in a solution which contains  $K_2La(SO_4)_3$  is given in a table. The conditions of synthesis and the composition of the double sulphates of potassium and lanthanum as well as of potassium and plutonium are listed in two tables. The solubility of  $K_2La(SO_4)_3$  and  $K_4Pu(SO_4)_4$  in  $K_2SO_4$  solutions is also tabulated. Table 1 contains data of publications on the separation of  $Am^{3+}$  and  $Pu^{4+}$  on the double sulphate of potassium and lanthanum. There are 5 figures, 10 tables, and 4 Soviet references.

SUBMITTED: November 22, 1957

Card 3/3

24390

S/186/60/002/002/004/022

EO71/E433

214200

AUTHORS: Grebenshchikova, V.I. and Bryzgalova, R.V.

TITLE: A study of the coprecipitation of Am and Eu with lanthanum oxalate

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.152-158

TEXT: The coprecipitation of americium and europium with lanthanum oxalate was studied in order to elucidate the mechanism of coprecipitation and to determine the crystallization coefficients of the above microcomponents on their distribution between solid and liquid phases. The experimental methods used were those developed by V.G.Khlopov (Ref.3: Tr.Rad.inst., 4, 65 (1938)), mainly an isothermal removal of supersaturation and the method of partial recrystallization of the solid phase (Ref.4: ZhNNKh, 3, 1, 36 (1958)). In preliminary experiments on coprecipitation of Am(III) (Am<sup>241</sup> was used) with lanthanum oxalate, it was established that the latter gives stable supersaturated solutions and a complete separation of the solid phase requires an extremely long time, nevertheless americium is completely transferred into the solid phase before the equilibrium between

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A study of the coprecipitation ...

lanthanum oxalate in the solid and liquid phase is reached. The experimental results indicate that in this system of supersaturated solutions of lanthanum oxalate, the formation of homogeneous ultramicrocrystallites and the homogeneous distribution of micro-components in the crystals precipitated cannot be assumed. The application of the Doerner-Hoskins logarithmic formula (Ref.6: J.Am.Chem.Soc., 47, 675 (1925)) gave a constant crystallization coefficient  $\lambda$  indicating the logarithmic character of distribution of americium in crystals of lanthanum oxalate. An effort to obtain the true value of the equilibrium distribution coefficient  $D$  by the method of prolonged recrystallization of lanthanum oxalate in its saturated solution containing americium (attaining equilibrium from below) and by the method of prolonged recrystallization of mixed crystals of components in a saturated solution of the macrocomponent (attaining equilibrium from above) as well as by partial recrystallization of the solid phase, was unsuccessful. It was only established that the coefficient  $\lambda = 4.8$  lies between the values of the coefficient of crystallization  $D$  obtained by the "from below" and "from above"

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S/186/60/002/002/004/012

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methods. The experimental results show that americium forms mixed crystals with lanthanum oxalate with some enrichment of the solid phase with americium ( $D = 4.8 \pm 0.5$ ). A study of the dependence of the value of the coefficient of crystallization on the acidity of the solution and the concentration of oxalate ions in it showed that the coefficient of crystallization is independent of the acidity but decreases with increasing concentration of oxalate ions. The decrease in the value of  $\lambda$  with an increasing concentration of oxalate ions in the solution is explained by a decrease in the active concentration  $Am(III)$  due to the formation of complex oxalate ions of  $Am(III)$  which apparently do not form mixed crystals with lanthanum oxalate. The system  $La_2(C_2O_4) \cdot 9H_2O (Eu^{3+}) \cdot HNO_3 \cdot H_2C_2O_4 \cdot H_2O$  was studied in order to compare the behaviour of transuranium and rare earth elements on coprecipitation with lanthanum oxalate. The experimental data obtained for europium (isotope  $Eu^{154}$  was used for experiments) were similar to those obtained for americium (III). The closeness of crystallization coefficients of americium ( $D = 4.8$ ) and europium ( $D = 3.8$ ) indicates that they cannot be separated by fractional crystallization with lanthanum oxalate. There are Card 3/4

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S/186/60/002/002/004/022  
A study of the coprecipitation ... E071/E433

3 figures, 7 tables and 7 references. 3 Soviet-bloc and 4 non-Soviet bloc. The three references to English language publications read as follows: G.Seaborg, I.Katz, The Transuranium Elements. 2, 1339, N.Y., T.L. (1949); J.Herman, Nuclear science abstracts. 12, 4, 1241 (1958); H.Doerner, W.Hookins, J.Am.Chem.Soc. 47, 675 (1925).

SUBMITTED: July 3, 1959

Card 4/4

21391  
S/186/60/002/002/005/022  
E071/E433

21.4200

AUTHORS: Grebenshchikova, V.I. and Bryzgalova, R.V.  
TITLE: A study of the coprecipitation of Y<sup>(III)</sup> with  
lanthanum oxalate

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.159-163

TEXT: The coprecipitation of yttrium with lanthanum oxalate was studied in order to compare its behaviour with that of americium and europium, as well as to determine the influence of a change in the ratio of solubilities of the components on the value of the coefficient of crystallization. The determination of the coefficient of crystallization was done by an isothermal removal of supersaturation in the same solutions as it was previously done for americium and europium (Ref.1:Radiokhimiya, 2, 2, 152, (1960)). The experimental results indicate that Y<sup>(III)</sup> coprecipitates with lanthanum and oxalate and this is combined with the formation of mixed crystals. The distribution of yttrium takes place according to the logarithmic law. The value of the coefficient of crystallization ( $D = 3.7 \pm 0.4$ ) is independent of the acidity of the solution within a range of 0.1 to 1.5 N HNO<sub>3</sub>. The coefficient of crystallization decreases with an increasing concentration of  
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oxalate ions. This could be ascribed to unequal changes in the solubilities of the components but no direct relationship between the coefficient of crystallization and the ratio of the solubilities of components was found. Therefore, a decrease in the value of the coefficient of crystallization  $D$  should be related to a change in the ratio of active concentrations of the components, due to the formation of yttrium oxalate complexes. Although the crystallization coefficients of  $\text{Am(III)}$ ,  $\text{Eu(III)}$  and  $\text{Y(III)}$  in oxalate solutions are above unity, they differ too little from each other to enable the separation of these elements by fractional crystallization. However, on the basis of the observed dependence of crystallization coefficients on the concentration of oxalate ions, the following ranges of the concentration of the latter within which the formation of complex oxalate ions of  $\text{Am(III)}$ ,  $\text{Eu(III)}$  and  $\text{Y(III)}$  takes place were calculated: for  $\text{Am(III)}$   $1.8 \times 10^{-7}$  to  $2.4 \times 10^{-7}$  g-ion/l; for  $\text{Eu(III)}$  and  $\text{Y(III)}$   $0.7 \times 10^{-7}$  to  $1.8 \times 10^{-7}$  g-ion/l. Since the crystallization coefficient of yttrium decreases more rapidly with an increasing concentration of oxalate ions than the coefficients of americium and europium, the former has a higher tendency to the formation of complexes than the

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A study of the coprecipitation of .. E071/E433

two latter elements. There are 3 figures, 4 tables and 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: R.Penneman, L.B.Asprey, International Conference of the peaceful uses of atomic energy, 838 (1955); T.Mellor, Record of Chem.Progress, 14 (2), 69 (1953).

SUBMITTED: July 3, 1959

Card 3/3

GREBENSHCHIKOVA, V.I.; BRYZGALOVA, R.V.

Coprecipitation of Pu(IV) with lanthanum oxalate. Radiokhimiia 2  
no.3:265-273 '60. (MIRA 13:10)  
(Plutonium) (Lanthanum oxalate)

22996

S/186/61/003/002/006/018  
E142/E435

212/100

AUTHORS: Grebenshchikova, V.I. and Davydov, Yu.P.

TITLE: Investigations on the state of  $\text{Pu}^{\text{IV}}$  in dilute solutions of nitric acid

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.2, pp.155-164

TEXT: The authors investigated the conditions under which  $\text{Pu}^{\text{IV}}$  can exist in solutions in the ionic, colloidal or pseudo-collodial state, at concentrations of plutonium of approximately  $10^{-8}$  M. The valency of plutonium in the  $\text{HNO}_3$  solution was controlled spectrophotometrically and by co-precipitation with zirconium phenyl acetate. The experiments showed that the element occurred in solution in the tetravalent state. All  $\text{Pu}^{\text{IV}}$  solutions were prepared with three-times distilled water; the acid solutions were prepared by adding freshly distilled  $\text{HNO}_3$ , the basic solutions by addition of KOH. The pH of the solution was measured with a glass electrode connected into the circuit of a bulb (lamp) type potentiometer. Accuracy of the instrument being  $\pm 0.05$  pH units. The activity of the samples was measured with apparatus in which the ionization chamber was maintained under strictly constant

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S/186/61/003/002/006/018

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Investigations on the state ...

operational conditions; the accuracy of measurement was 2 to 5%.  
 In all the experiments, the concentration of plutonium was  
 $10^{-8}$  M. The following methods of determination were employed:  
 1) adsorption of  $Pu^{IV}$  on glass; 2) ultrafiltration of the  
 $Pu^{IV}$  solutions; 3) centrifuging of the  $Pu^{IV}$  solutions;  
 4) migration of  $Pu^{IV}$  in an electric field. Methods 2, 3 and 4 are  
 direct methods for the determination of the state of the element in  
 solution. Ultrafiltration and centrifugation make it possible to  
 determine whether the radioactive element forms colloids; and, in  
 the affirmative case, to ascertain the percentage of colloidal  
 particles at various stages of dispersion and changes in this  
 percentage on changing the composition of the solution. The  
 electromigration method allows the determination of the sign of the  
 charge of the particles (positive or negative) and of the pH of the  
 solution at which overcharging of the particles sets in (if this  
 takes place). The authors investigated the changes in adsorption  
 of  $Pu^{IV}$  on a glass surface in relation to the changes in the  
 concentration of the  $H^+$  ions in the solution. The time of  
 adsorption was selected after studies on the adsorption kinetics  
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of Pu<sup>IV</sup> at various pH-values of the solution. It was found that the rate of achieving adsorption equilibrium differed at various pH-values. This is explained by the fact that the degree of hydrolysis and the degree of hydrolysis-product polymerization must increase with decreasing concentration of the H<sup>+</sup> ions and lead to the formation of less and less mobile particles. At pH = 2.1 the time for attaining adsorption equilibrium was 1 hour; at pH = 7.3 it was 5 hours. The authors selected a 5 hour adsorption period as this time was sufficient for attaining adsorption equilibrium at all pH-values used in the described experiments. By comparing results obtained by the ultrafiltration of Pu<sup>IV</sup> with those from adsorption experiments, the authors were able to gain some information on the state of plutonium in solution. Cellophane, with an average pore-diameter of 1  $\mu$ , was used as ultra-filter; special apparatus, made of perspex, was used for the filtration experiments. The rate of filtration was increased by introducing into the apparatus nitrogen under a pressure of 8 to 10 atm. Control experiments were carried out by centrifugation tests in 2 cm<sup>3</sup> glass test tubes. Particles of

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30 to 40  $\mu$ m diameter and larger were separated in these experiments and data obtained during these tests compared with values obtained in adsorption experiments; it was found that the dependence of the quantity of  $\text{Pu}^{\text{IV}}$ , separated during centrifuging, on the pH-changes of the solution was analogous to the dependence of the adsorption coefficient on the pH of the solution. Results obtained by investigations on the charge of  $\text{Pu}^{\text{IV}}$  at various pH-values are given in the form of a ratio between the activity in the anode or cathode field to the sum of the activities at the anode or at the cathode. Control experiments were carried out in the absence of an electric field, to account for possible diffusion of Pu during the experiment; very little diffusion was found to occur. The authors conclude that at concentrations of  $6.8 \times 10^{-8} \text{ M}$   $\text{Pu}^{\text{IV}}$  occurs in the ionic state (up to  $\text{pH} = 2.8$ ), in the pseudo-colloidal state (between  $\text{pH} = 2.8$  and  $7.5$ ) and in the colloidal state (between  $\text{pH} = 7.5$  and  $12.0$ ). There are 6 figures, 4 tables and 15 references: 5 Soviet-bloc and 10 non-Soviet-bloc. The four most recent references to English language publications read as follows: K.A.Kraus, Proceedings of Card 4/5

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S/186/61/003/002/006/018

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Investigations on the state ...

the International conference on the Peaceful Uses of Atomic Energy,  
7, 245 (1956); K.A.Kraus, F.Nelson, J.Am.Chem.Soc., 72, 9, 3901  
(1950); D.W.Ockenden, G.A.Welch, J.Chem.Soc., 3358 (1956);  
M.H.Kurbatov, H.B.Webster, I.D.Kurbatov, J.Phys.Coll.Chem., 54,  
1239 (1950).

SUBMITTED: July 12, 1960

Card 5/5



66711

213100

S/i86/01/003/002/007/018  
E142/E435

AUTHORS: Grebenshchikova, V.I. and Davydov, Yu.P.

TITLE: Adsorption of Pu<sup>IV</sup> on the surface of glass

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.2, pp.165-172

TEXT: Investigations on the adsorption of radioactive elements on ion-exchanging and non-exchanging surfaces (resins, filter paper, carbon, glass, teflon, polythene etc) are at present used for the determination of the state of radioactive elements which are contained in micro-quantities in solution. The state of radioactive element is a function of its concentration in the solution, the time elapsed since the preparation of the solution, the temperature and the pH of the solution etc; changes in the state of the investigated radioactive element in the solution can be deduced from variations in the adsorption, due to any of the above factors. Literature data show that the investigated element is, in the tetravalent state, similar to Zr<sup>IV</sup>, Th<sup>IV</sup>, U<sup>IV</sup> and Ce<sup>IV</sup> with regard to its hydrolytic properties and can thus be compared with these elements. The authors refer to work of I.Ye.Starik et al (Ref.8: ZhNKh, 2, 5, 1175 (1957) on the adsorption of Zr<sup>IV</sup> on glass and on filter paper. The method of investigation, preparation of Card 1/5

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Adsorption of Pu<sup>IV</sup> ...

solutions, measurement of pH and of the activity of the samples is identical to that described in the abovementioned work (Ref.10: V.I.Grebenshchikova, Yu.P.Davydov, Radiokhimiya, 3, 2, 165 (1961)). One method of investigation consisted in determining the adsorption at the time of preparation of the active solution; a second method comprised the introduction of a fresh, adsorbing surface into the system in which the adsorption equilibrium between the walls of the vessel, the colloidal impurities in the solution and the solution itself had already been determined. In the latter method optical, polished quartz glass of given diameter and thickness was used. In all experiments the concentration of Pu was  $6.8 \times 10^{-8}$  M. No adsorption equilibrium could be attained within 10 hours at pH = 2.9; however, a sharp maximum appeared on the adsorption curve at pH = 3.0. The adsorption curve for Pu<sup>IV</sup> is analogous to that obtained for Zr<sup>IV</sup> and Th<sup>IV</sup>. The increase in the adsorption of Pu<sup>IV</sup> on quartz glass between pH 1.0 and 3.0 is connected with the decrease in the action of the H<sup>+</sup> ions at a decrease of their concentration in the solution. The decrease in the adsorption after reaching a maximum cannot be explained by the

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# Adsorption of PuIV ...

fact that the radioactive element forms colloidal particles which have a charge of the same sign as the surface of the glass, since at a concentration of approximately  $10^{-8}$  M, PuIV forms negatively charge particles (colloids) at values of pH from 7.5 onwards. The authors suggest that this decrease in the adsorption coefficient of PuIV, after reaching a maximum value at pH = 3.0, is due to a primary process of irreversible adsorption of positively charged, hydrolysed forms of the element on the surface of solid impurities which are present in the solution. Desorption experiments were also carried out which showed that the desorption of PuIV decreases from pH = 3.1 to 3.2 onwards. At pH < 3.2 the adsorption of PuIV is reversible and the introduction of a fresh adsorbing surface will disturb the equilibrium of the system so that PuIV will be distributed between the solid surface and the solution. Results of investigations of the adsorption kinetics on quartz glass show that a desorption of the radioactive element occurs in this case rather than an adsorption of PuIV on the surface of quartz glass. Conditions prevailing at pH > 3.2 are also discussed. A decrease of the coefficient of adsorption at pH > 3.0 does not

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Adsorption of Pu<sup>IV</sup> ...

induce the formation of negatively charged colloids of Pu<sup>IV</sup>; this is indicated by experiments on the electro-migration carried out with large quantities of Pu<sup>IV</sup> at approximately  $10^{-5}$  M. At this concentration adsorption on the impurities, present in the solution, is small and the obtained results therefore indicate the behaviour of Pu<sup>IV</sup>. Changes in the properties of Pu<sup>IV</sup> are possibly due to hydrolysis and the therewith connected polymerization. The mechanism of hydrolysis is explained as a process taking place in three stages: 1) the formation of simple monomers; 2) the formation of low-molecular polymers; 3) the formation of high-molecular polymers which are not in equilibrium with the monomers. From pH = 3.0 hydrolysis and polymerization lead to the formation of particles of colloidal dimensions: these particles lose their characteristics and show the properties of pseudo-colloids. Although it is difficult to prove with existing methods of investigation, it can be assumed that radioactive elements (in micro quantities) are adsorbed on colloidal impurities in the form of colloidal particles. There are 4 figures, 4 tables and 14 references: 8 Soviet-bloc and 6 non-Soviet-bloc. The four most recent references to English language publications read as

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Adsorption of Pu<sup>IV</sup> ...

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follows: J.J.Schubert, J.W.Richter, J.Coll.Sci., 5, 376 (1950);  
K.A.Kraus, F.Nelson, J.Am.Chem.Soc., 72, 9, 3901 (1950);  
S.W.Rabideau, I.F.Lemons, J.Am.Chem.Soc., 73, 6, 2895 (1951);  
K.A.Kraus, The Transuranium elements. N.Y., 246, 519 (1949).

SUBMITTED: July 12, 1960

Card 5/5

GRABINSKIY, V.I.; LUKASH, V.I.

Coprecipitation of strontium, barium, and cerium with  
potassium sulfate. *Doklady Akad. Nauk SSSR* 1979, 247, 147.  
(Lit. 147)

(Titanium compounds)  
(Strontium compounds)  
(Barium compounds)  
(Potassium sulfate)

GREBENSHCHIKOVA, V.I.; DOBRYVA, V.N.

Coprecipitation of cerium and lanthanum with potassium sulfate.  
Radiokhimiya 3 no.5:377-383 '61. (MIRA 14:7)  
(Cerium compounds)  
(Lanthanum compounds)  
(Potassium sulfate)

S/186/61/003/005/005/022  
E071/E485

21/200

AUTHORS: Grebenshchikova, V.I., Bobrova, V.N.

TITLE: Coprecipitation of plutonium and americium with potassium sulphate

PERIODICAL: Radiokhimiya, v.3, no.5, 1961, 544-550

TEXT: A study of the coprecipitation of transuranium elements plutonium(IV) and americium(III) with potassium sulphate is described. Radioactive Pu<sup>239</sup> and Am<sup>241</sup> and chemically pure and twice recrystallized potassium sulphate were used for the experiments which were carried out at  $20 \pm 0.1^\circ\text{C}$ . The study consisted in the determination of the crystallization coefficients of plutonium and americium and their dependence on:  
1) rate of crystallization of the solid phase; 2) presence in the solution of other ions (Fe<sup>3+</sup> and Bi<sup>3+</sup>); 3) simultaneous presence in the solution of ions of Pu<sup>4+</sup> and Am<sup>3+</sup>; 4) concentration of microcomponents within  $10^{-5}\text{M}$  -  $10^{-9}\text{M}$  for plutonium and  $10^{-7}$  -  $10^{-9}\text{M}$  for americium. Two experimental methods were used: isothermal desaturation and partial recrystallization. The relationships obtained, namely the independence of the crystallization coefficients on the proportion of solid and liquid

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Coprecipitation of plutonium ...

S/186/61/003/005/005/022  
E071/E485

phases, rate of crystallization of the solid phase, the presence of other ions and the concentration of the two microcomponents within the investigated range, lead to the conclusion that  $\text{Pu}^{(IV)}$  and  $\text{Am}^{(III)}$  form with potassium sulphate anomalous mixed crystals and that there is no lower limit of miscibility during the formation of mixed crystals. It was established that plutonium adsorbed by the precipitated potassium sulphate strongly decreases the rate of its recrystallization (the rate of recrystallization of precipitated potassium sulphate was found by adding radioactive sulphur to the solution). The high values of the crystallization coefficients of plutonium ( $\lambda \approx 30$ ) and americium ( $\lambda \approx 42$ ) on their coprecipitation with potassium sulphate makes the use of the latter as a carrier for trans-uranium elements possible. There are 2 figures, 10 tables and 8 references: 7 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows: Ref. 5: H. Doerner, W. Hoskins, J. Am. Chem. Soc., v. 47, 2, 662 (1925).

SUBMITTED: June 12, 1960

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S/186/61/003/005/006/022  
EO71/E485

AUTHORS: Grebenshchikova, V.I., Bobrova, V.N.  
TITLE: On the nature of distribution of Ce<sup>(III)</sup> between the  
precipitate and solution of potassium sulphate  
PERIODICAL: Radiokhimiya, v.3, no.5, 1961, 551-554  
TEXT: It was shown in earlier works (Ref.3: ZhNKh, v.3, 1, 21  
(1958)) that on the determination of the crystallization  
coefficient of cerium by isothermal desaturation, the  
concentration of cerium in mixed crystals depends on the  
concentration of acid. In the present paper, some experimental  
results are reported which confirm that the nature of the  
distribution of Ce<sup>(III)</sup> between the precipitate and the solution of  
potassium sulphate during isothermal desaturation depends on the  
ability of the solid phase to recrystallize. For this purpose  
the distribution of Ce<sup>(III)</sup> (radioactive isotope Ce<sup>144</sup>, containing  
less than 1% of active impurities) between the solid and liquid  
phases was determined at various acid concentrations by isothermal  
desaturation, partial recrystallization of the solid phase and  
attainment of equilibrium from "below". By comparing the obtained  
results of the crystallization coefficients of Ce<sup>(III)</sup> in 0.5, 1  
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S/186/61/003/005/006/022  
EO71/E485

On the nature of distribution ...

and 1.5 N  $\text{HNO}_3$  with the data on the velocity of isotopic exchange of  $\text{K}^{42}$  between the precipitate (mixed crystals, obtained from supersaturated solutions of  $\text{K}_2\text{SO}_4$ , containing  $\text{Ce}(\text{III})$ ) and solution (saturated solution of  $\text{K}_2\text{SO}_4$  in 0.5 N  $\text{HNO}_3$ ) it was established that the ability of the mixed crystals formed to recrystallize governs the nature of distribution of  $\text{Ce}(\text{III})$ . If during the time of precipitation of the mixed crystals the latter can recrystallize, then a homogeneous distribution of cerium takes place; if the precipitate can recrystallize only partially, the logarithmic distribution with lower values of the coefficient of distribution ( $\lambda$ ) takes place and if practically no recrystallization of the precipitated crystals occurs, then a non-homogeneous distribution of the microcomponent in the solid phase with a maximum value of  $\lambda$  takes place. It was also established that the value of the coefficient of distribution of  $\text{Ce}(\text{III})$  between the precipitate and solution of potassium sulphate in 0.1, 1 and 1.5 N nitric acid is independent of the acid concentration ( $\lambda \approx D \approx 15$ ). It follows from the data obtained that with the same macrocomponent, the nature of its distribution in a system during isothermal desaturation will depend on the nature of the microcomponent, as the Card 2/3

On the nature of distribution ...

S/186/61/003/005/006/022  
E071/E485

recrystallization degree of the precipitate will depend on the solubility of the chemical compounds of microcomponents formed on the surface of the crystals. There are 5 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows: Ref. 4: H. Doerner, W. Hoskins, J. Am. Chem. Soc., v. 47, 675 (1925).

SUBMITTED: July 14, 1960

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S/186/61/003/006/001/010  
E040/E185

AUTHORS: Grebenshchikova, V.I., and Bobrova, V.N.

TITLE: On the form of cerium and lanthanum penetration into the crystals of potassium sulphate.

PERIODICAL: Radiokhimiya, v.3, no.6, 1961, 645-649

TEXT: Results are reported of an investigation designed to prove that double salts with the compositions of  $K_5La(SO_4)_4$  and  $K_5Ce(SO_4)_4$  are formed during adsorption of  $Ce^{3+}$  and  $La^{3+}$  ions on the surface of growing  $K_2SO_4$  crystals. For this purpose, the crystallisation coefficients of  $Ce^{3+}$  and  $La^{3+}$  were determined in the systems of:

$K_5La(SO_4)_4 - Ce^{3+} - K_2SO_4 - 0.5N HNO_3$  and  $K_5Ce(SO_4)_4 - La^{3+} - K_2SO_4 - 0.5N HNO_3$ . The method of partial recrystallisation

employed in the investigation was described previously (Ref.3: V.I. Grebenshchikova, R.V. Bryzgalova, ZhNKh, v.3, no.1, 36, 1958). Use was made of  $La^{140}$  and  $Ce^{144}$  radioisotopes. Determination was also made of the distribution coefficients of  $Ce^{3+}$  and  $La^{3+}$

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On the form of cerium and lanthanum... S/186/61/003/006/001/010  
EO40/E185

adsorbed on the surface of  $K_2SO_4$  crystals. The proof of the double salt formation is based on the equality between the crystallisation coefficients of cerium, or lanthanum, of the respective double salts and their distribution coefficients on the surface of potassium sulphate crystals. From the experimental results obtained it is concluded that mixed crystals are, in fact, formed by  $Ce^{3+}$  and  $La^{3+}$  ions with  $K_2SO_4$  and are co-precipitated in the form of double salts of  $K_5La(SO_4)_4$  and  $K_5Ce(SO_4)_4$  with  $K_2SO_4$ .

The method used in the investigation can be used for determining the form of adsorbed compounds in all cases when the chemical compound formed on the surface has a composition different from that of the adsorbent.

There are 7 tables and 4 Soviet-bloc references.

SUBMITTED: July 14, 1960

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GREBENSHCHIKOVA, V.I.; CHERNYAVSKAYA, N.B.

Coprecipitation of  $\text{Am}^{3+}$  with potassium and lanthanum double sulfate in sulfuric acid. Radiokhimiia 3 no.6:650-653 '61.  
(MIRA 14:12)

(Potassium lanthanum sulfate)  
(Americium)

GREBENSHCHIKOVA, V.I.; BOBROVA, V.N.

Effect of the composition of a complex ion on the value of the  
coefficient of crystallization. Radiokhimiia 5 no.1:3-8  
'63. (MIRA 16:2)

(Complex compounds)  
(Crystallization)



GREBENSHCHIKOVA, V.I.; BOBROVA, V.N.

Problem of the coprecipitation of plutonium with potassium  
sulfate. Radiokhimiia 5 no.1:9-11 '63. (MIRA 16:2)  
(Plutonium crystals) (Potassium sulfate)

L 55331-65 EWT(m)/EPF(n)-2/EWP(t)/EWP(b)/EWA(h) Peb/Pu-4 IJP(c) JD/HW/JG/  
GS

ACCESSION NR: AT5015386

UR/0000/65/000/000/0026/0030

542.65:546.799.4+546.654:661.733

AUTHOR: Grebenshchikova, V. I.; Bryzgalova, R. V.; Chernitskaya, I. V.

27

B+1

TITLE: Coprecipitation of plutonium with lanthanum oxalate

SOURCE: AN SSSR. Otdeleniye obshchey i tekhnicheskoy khimii. Soosazhdeniye i adsorbtsiya radioaktivnykh elementov (Coprecipitation and adsorption of radioactive elements). Moscow, Izd-vo Nauka, 1965, 26-30

TOPIC TAGS: plutonium precipitation, lanthanum oxalate, crystallization coefficient, plutonium adsorption, ion exchange, plutonium complex

ABSTRACT: At 50C, Pu(IV) coprecipitates with lanthanum oxalate to form mixed crystals, but the Pu content of the solid phase is considerably less (crystallization coefficient  $\lambda = 15$ ) than at 20C ( $\lambda = 21$ ). To elucidate the causes of the decrease in  $\lambda$  of Pu with rising temperature, the value of  $\lambda$  (determined by isothermal removal of supersaturation) was studied as a function of the change in the composition of the liquid phase (change in the concentration of oxalic acid, which alters the degree of complexing of Pu) and as a function of the solubility ratio of the components. In the system under consideration,  $\text{La}_2(\text{C}_2\text{O}_4)_3 \cdot 8\text{H}_2\text{O} - \text{Pu}(\text{C}_2\text{O}_4)_2 - 1.5$

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ACCESSION NR: AT5015386

N HNO<sub>3</sub> - H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>, no direct relationship was observed between  $\lambda$  and the solubility ratio of the components. Using an ion-exchange method of adsorption of Pu on KU-2 and EDE-10 resins, the authors arrived at the definite conclusion that the main factor affecting the change in the crystallization coefficient of Pu is the change in the active Pu concentration caused by the formation of a complex between Pu(IV) and oxalate ion. Indeed, the course of the curve representing the decrease in  $\lambda$  with increasing oxalic acid concentration is analogous to that of the decrease in the adsorption of Pu on the KU-2 cation-exchanger in the same solutions (see Fig. 1 of the Enclosure). In addition, a relationship exists in this system between the decrease in  $\lambda$  and the change in the composition of the solid phase. This decrease in  $\lambda$  may be due to a change in the parameters of the crystal lattice of lanthanum oxalate associated with the change  $\text{La}_2(\text{C}_2\text{O}_4)_3 \cdot 9\text{H}_2\text{O} \rightarrow \text{La}_2(\text{C}_2\text{O}_4)_3 \cdot 8\text{H}_2\text{O}$ , even though both crystal hydrates form monoclinic crystals. Orig. art. has: 2 figures and 6 tables.

ASSOCIATION: None

SUBMITTED: 05Aug62

ENCL: 01

SUB CODE: IC, Gc

NO REF SOV: 008

OTHER: 002

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L 55341-65 EWT(m)/EPF(n)-2/EWG(m)/T/EWP(t)/EWP(b)/EWA(h) Peb/Pu-4  
IJP(c) RWH/JD/WW/JG/GS/RM

ACCESSION NR: AT5015387

UR/0000/65/000/000/0030/0034

542.65:546.799.4+546.654:661.733.1

AUTHOR: Grebenshchikova, V. I.; Bryzgalova, R. V.; Chernitskaya, I. V.

TITLE: Coprecipitation of plutonium with lanthanum oxalate

SOURCE: AN SSSR. Otdeleniye obshchey i tekhnicheskoy khimii. Soosazhdeniye i adsorbtsiya radioaktivnykh elementov (Coprecipitation and adsorption of radioactive elements). Moscow, Izd-vo Nauka, 1965, 30-34

TOPIC TAGS: plutonium precipitation, lanthanum oxalate, mixed crystal, crystallization coefficient, plutonium complex, ion exchange

ABSTRACT: Plutonium was coprecipitated with lanthanum oxalate at 50C from mixed solutions of nitric acid and ammonium oxalate. At 50C, Pu forms anomalous mixed crystals with lanthanum oxalate. The crystallization coefficient  $\lambda$  of Pu was determined by isothermal removal of supersaturation. To determine the cause of the decrease in  $\lambda$ , the latter was studied as a function of the ammonium oxalate concentration in the solution ( $\lambda$  dropped from 14 in 0.1 M  $(\text{NH}_4)_2\text{C}_2\text{O}_4$  to 11 in 0.25 M  $(\text{NH}_4)_2\text{C}_2\text{O}_4$ ). The character of the decrease of  $\lambda$  with concentration in ammonium oxalate was found to be different from that in solutions of nitric and

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ACCESSION NR: AT5015387

oxalic acid (see Fig. 1 of the Enclosure). This difference may be due to different concentrations of the "free"  $(C_2O_4)^{2-}$  ions, which alter the degree of complexing of Pu. No definite relationship was found to exist between  $\lambda$  and the solubility ratio of the salts. Using the adsorption of Pu on the KU-2 cation exchanger and EDE-10 anion exchanger, the authors found that as the ammonium oxalate concentration increases, a decrease in cationic adsorption from the corresponding solutions and a decrease in  $\lambda$  are observed. It is concluded that the decrease in  $\lambda_{Pu}$  is chiefly due to a drop in the active concentration of Pu(IV) caused by the formation of complex oxalate ions which cannot enter into the lattice of lanthanum oxalate, and is not due to the change in the solubility ratio of the components. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 05Aug62

ENCL: 01

SUB CODE: IC, GC

NO REF SOV: 007

OTHER: 000

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L 55341-65

ACCESSION NR: AT5015387

ENCLOSURE: 01

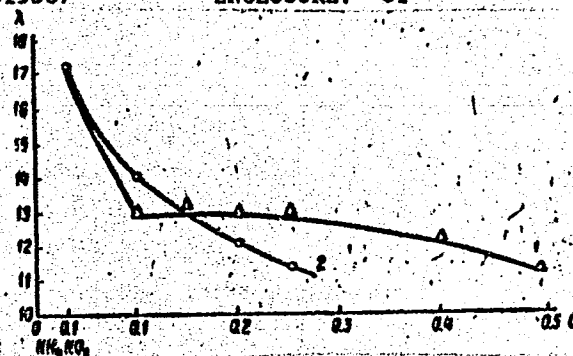


Figure 1. Variation of the crystallization coefficient of plutonium with changing composition of the liquid phase: 1 - variation of  $\lambda_{Pu}$  in solutions of nitric and oxalic acid; 2 - variation of  $\lambda_{Pu}$  in solutions of nitric acid and ammonium oxalate (1st point - value of  $\lambda_{Pu}$  in ammonium nitrate solution).

Card

3/3

L 55339-65 EWT(m)/T/EWP(t)/EWP(h) LJP(c) JD/JG/GS

ACCESSION-NR: AT5015389

UR/0000/65/000/000/0103/0109  
542.65:546.654+546.661+546.631:546.723:54-36

AUTHOR: Grebenshchikova, V. I.; Prokudina, A. F.

TITLE: Mechanism of trapping of La, Eu, and Sc by ferric hydroxide

SOURCE: AN SSSR. Otdeleniye obshchey i tekhnicheskoy khimii. Soosazhdeniye i adsorbtsiya radioaktivnykh elementov (Coprecipitation and adsorption of radioactive elements). Moscow, Izd-vo Nauka, 1965, 103-169

TOPIC TAGS: rare earth adsorption, ferric hydroxide, isotope concentration, ion exchange, ion trapping

ABSTRACT: The adsorption of La, Eu, Sc, and their radioactive isotopes La<sup>140</sup>, Eu<sup>152</sup>, and Sc<sup>46</sup> on aged ferric hydroxide Fe(OH)<sub>3</sub> was studied. The mechanism of adsorption of these elements, which have a tendency to hydrolyze, is determined by the hydrogen ion concentration in the solution. For all three elements, there are pH values for which the dependence of the adsorption on the amount of the solid phase is linear. Deviations from linearity take place in pH regions where an appreciable hydrolysis of the elements begins; at such pH values, the adsorption is irreversible in character. It is suggested that the maxima on the curves of percent adsorption vs. pH are due to the presence in the solution

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ACCESSION NR: AT5015389

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of hydrolyzed ions of the type  $R(OH)_2^+$ , which readily interact with the hydroxyl groups of the surface molecules of the adsorbent (R being the rare earth element). The drop in adsorption with increasing concentration of hydroxyl ions in the solution may be due either to the formation of nondissociated molecules  $R(OH)_3$ , which interact much more weakly with the surface of  $Fe(OH)_3$  than do the hydrolyzed species of the type  $R(OH)_2^+$  and  $R(OH)_2^{2+}$ , or to the formation of  $R(R(OH)_2)_{(3+n)}^{+n}$ , assuming that a certain quantity of polymers of the type  $R(R(OH)_2)_n^{+n}$  is formed in the solution prior to the formation of the neutral molecules. The formation of radiocolloids may also be one of the reasons for the decline in adsorption. Orig. art. has: 9 figures and 5 tables.

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